

इंटरनेट

मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

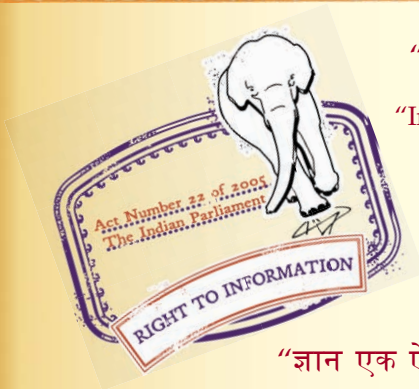
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 8597 (1977): Flat Belt Conveyors [MED 6: Continuous Bulk Conveying, Elevating, Hoisting Aerial Ropeways and Related Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR FLAT BELT CONVEYORS

1. Scope — Covers the requirements of single roll flat belt conveyors using rubber canvas belts conforming to IS : 1891 (Part I)-1968 'Specification for rubber conveyor and elevator belting: Part I General purpose belting (first revision)'.

1.1 This standard does not cover the requirements for portable conveyors of any sort and is not applicable to conveyors handling material which does not behave as a solid.

2. Terminology — For the purpose of this standard, the terms and definitions as given in IS : 4240-1967 'Glossary of conveyor terms and definitions' shall apply.

3. Limitations in Use of Flat Belt Conveyors and Design Aspects

3.1 Flat belt conveyors are suitable where the belts are meant to carry bulk materials having relatively high angle of repose, such as prepared moulding sand and undelinted cotton seed and where it is desirable to use ploughs or deflector plates with intermediate discharge or for distributing material simultaneously at several points along the conveyor. They are also used for picking and sorting where the material should be spread in thin layers for thorough inspection.

3.2 Flat belt conveyors are built in two general types: (a) those with belts sliding on wood or steel slider beds, and (b) those with belts operating over straight ball or roller bearing idlers. The latter is preferred type although sliding belt conveyors are most frequently used where loads are light, where belt may be continuously supported and where the conveyor lengths and speeds are not excessive. This standard, however, covers the flat belt conveyors with idlers mounted on anti-friction bearings.

4. Dimensions

4.1 Size — The size of the flat belt conveyors shall be the width 'b' of the conveyor belt which the conveyor is designed to carry. It shall be one of the following:

b, mm	400	500	650	800	1 000	1 200	1 400	1 600
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4.2 Length — The length of the conveyor is the total length from the axis of the delivery pulley to the axis of the tail end pulley with all adjustable or telescopic sections, where such sections are used, adjusted to their shortest length measured along the path of the conveyor. The length of flat belt conveyors shall not exceed 60 m.

5. Pulley

5.1 Diameter — The basic diameter of the pulley shall be one of the following:

200, (219·1), 250, 315, 400, 500, 630, 800, 1 000, 1 250 mm

Note — Bracketed size is non-preferred.

5.2 The pulleys shall conform to IS : 8531-1977 'Specification for pulleys for belt conveyors'.

6. Idlers

6.1 Idlers Diameters — The nominal diameters of idlers shall be related to duty, that is, load and speed, and shall be one of the following:

76·1, 88·9, 101·6, (114·3), (120), 127, (139·7), 152·4 mm

Note — Bracketed sizes are non-preferred.

6.2 The idlers shall conform to IS : 8598-1977 'Specification for idlers and idlers sets for belt conveyors'.

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6.3 Pitch of Idlers — The pitch of carrying and return idler sets shall not exceed the maximum values given below. At receiving points where considerable impact may occur, carrying idlers may be spaced more closely and care shall be taken to prevent damage to the belt by the use of special types of impact idlers or other suitable means:

Belt Width mm	Carrying Idlers mm	Return Idlers mm
400 500 650 800 1 000	1 000	3 000
1 200 1 400 1 600	750	3 000

6.4 A set of self-aligning idlers shall be provided at a distance of 15 m on the carrying run and at 30 m on the return run. In case of short conveyors, at least one set of self-aligning idlers shall be provided on the carrying and return run.

7. Take-Up Device — The requirements pertaining to take-up device shall conform to IS : 4776 (Part I)-1977 'Specification for troughed belt conveyors: Part I Troughed belt conveyors for surface installations (first revision)'.

8. Skirt Plates

8.1 Skirt plates are fitted to feed chute stringers to guide the material into the centre of the belt and to prevent spillage.

8.2 Length of Skirt Plate — Skirt plates for flat belt conveyors shall be 5 percent longer than what are used in troughed belt conveyors; this is recommended to enable the material to stabilize at the belt speed. The length of skirt plate may be 400 mm for each 10 m/min of belt speed; but not less than 900 mm.

8.3 Width Between Skirt Plates — The maximum distance between skirt plates is normally two-thirds of the width of the conveyor belt in case of troughed belt conveyors. But on flat belts, depending on how well the belt is trained centrally, how well it is supported by idlers or on loading plate beneath the plate, the space between the skirt plates may be but a little less than the belt width.

9. Design — The following points should be given due consideration while designing flat belt conveyors.

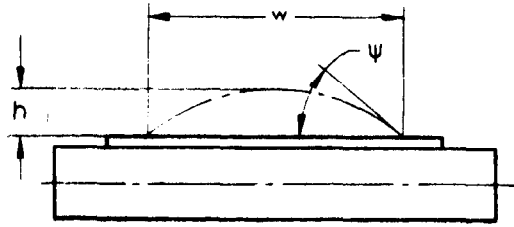
9.1 Maximum Lump Size of Material Handled — Flat belts should not be used for handling large lumps of bulk material especially on incline. It is recommended to limit the maximum lump size to 250 and 375 mm for sized and unsized lumps respectively.

9.2 Speed — Belt width and speed should be designed giving due regard to the nature, size, grading, characteristics and angle of repose of the material to be handled and to the problems posed by their speed and the use of skirt plate. Speed of flat belt conveyors should be less than that of troughed belt conveyors. The maximum speed for flat belts is recommended as 0.6 m/s.

9.3 Inclination — Flat belt conveyors shall not be normally employed for inclined carrying. The maximum inclination of solid belt conveyor shall be 6°.

9.4 Width — Width of flat belt conveyor should be more than corresponding width in troughed belt conveyor system. The minimum width should be 4 times of maximum lump to be handled with 10 percent lumps and 90 percent fines and at least 6 times with all lumps and no fines. For intermediate condition, the designer has to use his own discretion.

9.5 Capacity — The capacity of the flat belt conveyors should be found out assuming following cross sections:



where

- w = width of the load stream,
 h = height of load stream, and
 ψ = angle of repose.

10. Clearance of Idlers

10.1 Vertical clearance between the bottom of the carrying idler and the top of the idler support frame/deck plate shall be as follows:

<i>Idler Diameter</i>	<i>Nominal Clearance</i>
mm	mm
76.1 to 127	30
139.7 „ 152.4	35

10.2 The vertical clearance between the top of return idlers and the conveyor stringer shall not be less than 75 mm.

11. Marking — The belt conveyor shall be marked with the following information on the name-plate provided on the conveyor at suitable prominent place(s):

- Manufacturer's name and identification mark,
- Purchaser's equipment Code No.,
- Type and width,
- Capacity and speed, and
- Any other information specifically required by the purchaser.

11.1 ISI Certification Marking — Details available with the Indian Standards Institution.

EXPLANATORY NOTE

This standard covers the requirements for flat belt conveyors. Flat belt conveyor is used conveniently and economically to transport parts, packages, bags, boxes or crates and may also be used for carrying large and heavy objects with or without belt as in gravity roll conveyors. These conveyors are easily adapted to continuous movement of materials during manufacturing or for conveying to storage or shipping department.